

MODEL VERIFICATION (Draft 08-18-17)

- Purpose
 - Responsive to issues raised in EIS process
 - DNR Response to Comments recommended permits address model verification
 - Use permit-required monitoring data to evaluate the following:
 - Consistency with previous model predictions of long-term impact assessments
 - Appropriateness of model inputs
 - The potential need to initiate adaptive management / mitigation
- Draft permit would require submittal of:
 - Annual assessment
 - Actual monitoring data for the previous year would be compared against values predicted by the GoldSim model as updated with actual inputs. (Examples of updated inputs could include actual precipitation, actual volume of mine rock moved/stockpiles, actual sulfur content, etc.)
 - Are observed flows and concentrations within the range of predicted GoldSim values at each comparison locations? ('backwards-looking')
 - Comparison locations could include various pit, stockpile and seepage containment system sumps, collection ponds and WWTS influents
 - Are predicted future concentrations still within the range of predicted GoldSim values at downgradient groundwater locations? ('forward-looking')
 - Comparison locations would focus on downgradient monitoring wells
 - For any actual values outside the range of values predicted by GoldSim, subsequent evaluation could include:
 - Do these observed values show increased project impacts?
 - Are they the result of mine plan changes not captured in the updated GoldSim model?
 - Are they the result of incorrect model assumptions?
 - Are they indicative of potential undesirable or unacceptable future outcomes?
 - If the answer to any of these questions is 'yes', a work plan would be submitted for approval that would address the specific concern(s)
 - Assessment report to be submitted each year
 - Longer-term assessment
 - Broader focus
 - Would evaluate underlying assumptions and relationships in models feeding into GoldSim, such as XPSWMM, ModFlow, Geochemistry, etc.
 - Would be completed every 5 years, with assessment report included as part of application for permit reissuance
 - Permit would require submittal of detailed work plan for the longer term assessment at least 6 months prior to the application deadline
 - Assessment would be required to include an evaluation of the potential need for adaptive management, contingency actions and/or mitigation

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